OIPE IAP78 SEP 19 2005 PATENT & TRADEMARK OFFICE

PATENT
YR1-11

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

In re Application of: William Hreha et al	: Date: September 15, 2005
Serial No. 09/822,691	: Group Art Unit: 2157
Filed: March 30, 2001	: Examiner: El Hadji Malick Sall
For: Dynamic Resource Allocation Architecture for Differentiated Services Over Broadband Communication Networks	:

APPEAL BRIEF TRANSMITTAL LETTER

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Enclosed is an Appeal Brief, in triplicate, for the above patent application.

___ Appellant petitions for an extension of time for month(s). If an additional extension of time is required, please consider this a petition therefor.
Fee:

___ An extension for month(s) has already been secured; the fee paid therefore is deducted from the total fee due for the total months of extension now requested. Extension fee due with this request:

_X_ Appellant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that appellant has inadvertently overlooked the need for a petition for extension of time.

___ The Appeal Brief Fee was paid in a prior appeal in which there was no decision on the merits by the Board of Appeals.

___ The Appeal Brief Fee is enclosed herewith. Fee: $500.00
_X_ Charge the Appeal Brief Fee to my Credit Card. Credit Card Payment Form PTO-2038 is enclosed herewith.

_X_ The total fee due is $500.00

_X_ Address all correspondence to Joyce Kosinski, Karambelas & Associates, 655 Deep Valley Drive, Suite 303, Rolling Hills Estates, CA 90274.

This letter is submitted in triplicate.

Respectfully submitted,
AW Karambelas
Anthony W. Karambelas
Reg. No. 25,657

Karambelas & Associates
655 Deep Valley Drive, Suite 303
Rolling Hills Estates, CA 90274
Telephone: (310) 265-9565 Facsimile: (310) 265-9545

PATENT
Docket No. YR1-11

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT:	William Hreha et al
SERIAL NUMBER:	09/822,691
FILING DATE:	March 30, 2001
FOR:	Dynamic Resource Allocation Architecture for Differentiated Services Over Broadband Communication Networks
GROUP ART UNIT:	2157
EXAMINER:	El Hadji Malick Sall

CERTIFICATE OF MAILING
UNDER 37 CFR 1.8

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Identification of Transmitted Papers

Appeal Brief in triplicate, Appeal Brief Transmittal Letter in triplicate, Credit Card Payment Form PTO-2038, return receipt postcard

I hereby certify that the above-identified correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on **September 15, 2005**.

Joyce E. Kosinski
Joyce E. Kosinski
Depositor

Karambelas & Associates
655 Deep Valley Drive, Suite 303
Rolling Hills Estates, CA 90274
Telephone: (310) 265-9565
Facsimile: (310) 265-9545

AF
ZNW

PATENT
YR1-11

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS

Appeal No.________________________

In re Application of: WILLIAM HREHA ET AL

Serial No.: 09/822,691

Filed: March 30, 2001

For: DYNAMIC RESOURCE ALLOCATION ARCHITECTURE FOR DIFFERENTIATED SERVICES OVER BROADBAND COMMUNICATION NETWORKS

APPELLANTS' BRIEF ON APPEAL

Anthony W. Karambelas
655 Deep Valley Drive, Suite 303
Karambelas & Associates
Rolling Hills Estates, CA 90274

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS

In re Application of: WILLIAM HREHA ET AL	: Date: September 14, 2005
Serial No.: 09/822,691	: Group Art Unit: 2157
Filed: March 30, 2001	: Examiner: El Hadji Malick Sall
For: DYNAMIC RESOURCE ALLOCATION ARCHITECTURE FOR DIFFERENTIATED SERVICES OVER BROADBAND COMMUNICATION NETWORKS	:

APPELLANTS' BRIEF ON APPEAL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This appeal is taken from the decision of the Examiner in the Office Action dated April 27, 2005 finally rejecting Claims 1-18 of the above-identified patent application. This brief is submitted in accordance with the provisions of 37 C.F.R. §41.37.

REAL PARTY IN INTEREST

The real party in interest is Space Systems/Loral, Inc. which acquired rights to the present application by way of an assignment from the inventors.

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellants, Appellants' legal representative, or the assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

STATUS OF CLAIMS

Claims 1-18 are currently pending in this application. Claims 1-18 were finally rejected in the Office Action dated April 27, 2005. Appellants appeal from this final rejection.

STATUS OF AMENDMENTS

A communication responsive to the final rejection dated April 27, 2005 was filed with no amendments made therein.

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention provides for a dynamic resource allocation architecture or system for use in a communication system that supports differentiated services with different levels of priority. The objective is to improve the quality of service (QoS) for communication services between a local area network edge device and a gateway that interfaces to an Internet service provider or corporate network.

The communication system comprises one or more personal computers coupled by way of a network to the local area network edge device. For example, the local area network edge device communicates by way of a satellite with the gateway. The satellite implements a communication link between the local area network edge device and the gateway. The satellite provides connectivity to the aggregation point on the ground, which is the gateway in the case of a non-processing satellite or an onboard resource management element in the case of a processing satellite.

The dynamic resource allocation architecture or system implemented in the communication system comprises an Internet protocol network that includes a classifier for identifying specific types of messages, and a dynamic assignment/multiple access (DAMA) communication protocol for transmitting data over the system.

The transport protocol supported at a transport layer of the dynamic resource allocation architecture or system may be a Transmission Control Protocol (TCP) or User Datagram Protocol (UDP). For example, the local area network edge device may use Internet Protocol (IP) and IEEE 802.3 Ethernet Protocol, Universal Subsystem Bus (USB), or IEEE 802.11 media access protocols.

The service differentiation to accommodate user application requirements and expectations is achieved by architectures specified by IETF-RFC 2475. The user traffic is classified, marked, and policed. The traffic is appropriately marked using a differentiated service (DS) field in IPv4 or IPv6 headers. Based on classification and marking, the traffic is queued and buffered prior to resource allocation. The differentiated service may be prioritized and queued into seven queues (in a reduced-to-practice embodiment), ranging from highest to lowest priority.

Differentiated service classes are managed using a dynamic resource allocation architecture. The dynamic resource allocation architecture comprises resource request, resource usage detection, resource allocation and scheduling algorithms. The resource allocation may also depend on policy rules and static resource planning information. The resource allocation algorithms may be used in time division, code division or frequency division multiple access systems, for example. The signaling protocol used in the present invention is based on public signaling standards, such as Digital Video Broadcasting (DVB), DVB-RCS001, Rev. 14, IEEE 802.16, or IETF-RFC 2205, for example.

The subject matter defined in the independent claim (claim 1) involved in the appeal can be found in the specification on page 3, lines 10-26 ; and in Figures 1 and 2 wherein there is shown a system 20 which employs a DAMA, an Internet Protocol 43, and a classifier 44.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Connors U. S. Patent 6,449,267 in view of Baker et al U. S. Patent 6,775,231.

ARGUMENT

Rejection under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 6,449,267 to Connors in view of U. S. Patent 6,775,231 to Baker et al.

The Examiner contends that Connors teaches the invention substantially as claimed including method and apparatus for medium access control from integrated services packet-switched satellite network.

As to claim 1, the Examiner contends that Connors teaches a system that comprises a gateway that interfaces to an Internet provider or corporate network, a local area network edge device, a satellite that provides a communication link between the gateway and the local area network edge device and one or more personal computers coupled by way of a network to the local area network edge device, a dynamic resource allocation system that supports differentiated services with different levels of priority, comprising:

an Internet protocol network (col. 5, lines 12-14, Connors discloses the MAC protocol described herein can be used with video conferencing tools running over the Internet).

a dynamic assignment/multiple access (DAMA) communication protocol for transmitting data over the system (col. 2, lines 38-47, Connors discloses Fig. 1 is a communication system using a demand assignment multiple access (DAMA) protocol (i.e. just like dynamic assignment/multiple access or DAMA, meaning the resources are allocated when actually needed or demanded, not reserved ahead of time), comprising two primary elements: (1) a bandwidth request mechanism and (2) a mechanism for coordinating transmission (i.e. "transmitting data over the system")).

The Examiner, however, admits that Connors fails to teach explicitly a classifier for identifying specific types of messages.

However, the Examiner goes on to state that Baker teaches a classifier for identifying specific types of messages (col. 5, lines 26-29, Baker discloses a classifier 302

checks a special Differentiated Services (i.e. offerings that can be classified by type, or quality, of service) field of each packet header to identify the packet's Assured Forwarding class (i.e. a message)).

The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Connors in view of Baker to provide a classifier for identifying specific types of messages and one would be motivated to do so to allow prioritizing real time traffic for a higher fee.

Appellants respectfully submit that Connors '267 is directed to "A method, apparatus, article of manufacture, and a memory structure for communicating data from a first node to a second node....The method comprises the steps of receiving input data at "the first node, transmitting a resource request having a resource metric from the first node to an allocating agent, receiving an allocation of resource units according to the resource metric, the resource units comprising at least one DAMA channel resource metric and at least one RA channel resource unit, queuing the input data into the DAMA channel buffer, dequeuing input data from the DAMA channel buffer into the RA channel buffer according to a comparison between a predicted transmission delay and a delay threshold, and transmitting the dequeued input data in the RA channel buffer via the RA resource units. The article of manufacture comprises a data storage device tangibly embodying instructions to perform the method steps described above. The apparatus comprises a receiver for receiving input data, a DAMA channel buffer for accepting the input data, a resource unit request module, operatively coupled to the transmitter and the receiver, the resource unit request module for generating a resource request metric when indicated by an information rate of the input data, and for receiving an allocation of resource units via the receiver, and a channel selection module, for dequeuing input data from the DAMA channel buffer to an RA channel buffer according to a predicted channel delay and a delay threshold."

Appellants respectfully submit that at col. 5, lines 12-14 Connors discloses "the MAC protocol described herein can be advantageously used with video conferencing tools running over an Internet MBone." Appellants respectfully submit that this does little to cure the deficiencies of the instant rejections as they apply to claim 1 as recited below.

At col. 2, lines 38-47 and in Fig. 1 of Connors '267 there is disclosed a diagram showing the operation of a communication system using a demand assigned multiple access (DAMA) protocol. DAMA techniques, which address the capacity issue by using instantaneous bandwidth demands to statistically multiplex many variable bit rate (VBR) sources on one channel, can be used to deliver predictable delays without the poor capacity of fixed bandwidth allocation (FBA). DAMA based medium access control (MAC)

protocols comprise two primary elements: (1) a bandwidth request mechanism and (2) a mechanism for coordinated transmission.

In Baker et al 6,775,231 there is disclosed "In one embodiment, the technique dynamically adjusts resource allocations for each traffic class based on actual traffic load measured for each service class. In this way, the per-hop-behavior required by a differentiated service model may be achieved. Core nodes of a network operating according to a differentiated service model dynamically adjust resource allocations for multiple traffic classes without requiring explicit signaling from other network nodes. Policies for sharing resources among multiple service classes can be enforced."

Appellants respectfully submit that at col. 1, lines 6-8 of Baker '231 there is disclosed that "The present invention relates to data networking and more particularly to providing differentiated services on an Internet Protocol network such as the Internet."

Appellants respectfully disagree that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Connors in view of Baker to provide an Internet protocol network, the motivation being to allow access to the Internet. Appellants respectfully contend that Connors '267, directed to services packet-switched satellite networks, is not properly combinable with Baker '231, directed to dynamic weighted resource sharing, since in neither reference is there any suggestion, implication or motivation to combine one with the other, aside from Appellants' own specification.

Further, as the Examiner admits, Connors fails to teach a classifier for identifying specific types of messages and Baker does little to cure this deficiency at col. 5, lines 26-29 relied upon by the Examiner. It is not clear to Appellants that the identifying of the packet's Assured Forwarding class as disclosed in Baker '267 at col. 5, lines 27 et seq. contemplates the classifier of Appellants which identifies specific types of messages. Further, as recited above, Appellants respectfully submit that it is highly improbable that one of ordinary skill in the art would be motivated to combine Baker with the non-analogous Connors, there being no motivation, suggestion or implication to do so in either reference as recited above.

Therefore, Appellants respectfully disagree that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Connors in view of Baker to provide a classifier for identifying specific types of messages, the motivation being to allow policies for sharing resources among multiple service classes to be enforced as contended by the Examiner.

Further, Appellants respectfully submit that Connors '267, aside from the use of a satellite and a demand assign multiple access (DAMA), is completely non-analogous and neither teaches, suggests or implies the system as defined in claim 1 of the instant claims. Appellants further contend that Connors '267 does not employ a gateway that interfaces to

an Internet service provider or corporate network; a local area network edge device; a satellite that provides a communication link between the gateway and the local area network edge device; or a dynamic resource allocation system as opposed to a demand resource allocation system that comprises an Internet protocol network comprising a classifier for identifying specific types of messages and a dynamic assignment/multiple access (DAMA) communication protocol for transmitting data over the system. Appellants respectfully submit that the non-analogous Baker '231 is not properly combinable with Connors, there being no motivation, suggestion or implication in either reference to do so other than Appellants' own specification, and in any case, however said references are combined, Baker does little to cure the deficiencies of Connors '267.

As to claim 2, the Examiner states that Baker teaches the dynamic resources allocation system recited in claim 1 wherein the satellite is a non-processing satellite (col. 2, lines 62-64, Connors discloses in a satellite network 100, the AA 108 resides at a terrestrial master control station (since the AA 108 performs bandwidth allocation, when it is not resided in the satellite, then it is a "non-processing satellite")).

Appellants respectfully disagree that Baker, directed to a technique which dynamically adjusts resource allocations for each traffic class based on actual traffic load measured for each service class for application to the Internet and is totally devoid of any application, suggestion or implication to employ this technique in satellite communications, in any way teaches the dynamic resources allocation system recited in claim 1. Furthermore, Appellants respectfully contend that at col. 2, lines 62-66 of Connors there is merely disclosed an instantaneous bandwidth allocating agent AA 108 which performs bandwidth allocations in satellite networks. Appellants respectfully submit this does little to cure the deficiencies of Baker as recited above. Further, Appellants respectfully contend that in essence, as seen in the specification and claims of Connors '267, there is taught a receiver for receiving input data, a demand assigned multiple access (DAMA) channel buffer for accepting the input data, a resource unit request module which is coupled to a transmitter and a receiver so that the resource unit request module generates a resource request metric for receiving allocation of resource units via the receiver and a channel selection module for dequeuing the input data from the DAMA channel buffer to a random access channel according to a comparison between a predicted transmission delay and a delay threshold. The primary system and concern of Connors '267 is as is seen in col. 4, lines 36 et seq. "There is therefore a need for a medium access control protocol that allows transmission of information with minimal delay, while simultaneously maximizing resource unit utilization. The present invention satisfies that need."

Appellants respectfully submit that although the teaching at the recited passage indicates that the allocating agent (AA) 108 may reside either in the satellite or at a

terrestrial station, this in and of itself does not define a non-processing satellite as required by claim 2. Appellants respectfully submit that Connors '267 is absolutely silent with regard to other processing assets that may be possessed by satellite 102 and certainly does not exclude same so that in Appellants' view 102 is not taught to be a non-processing satellite at the recited passage as relied upon by the Examiner.

As to claim 3, the Examiner states that Connors teaches the dynamic resource system recited in claim 2 wherein the non-processing satellite is a bent pipe communication link (col. 2, lines 62-64, Connors discloses in a satellite network 100, the AA 108 resides at the satellite (since the AA 108 is performs bandwidth allocation, when it is resided in the satellite, then it is a "processing satellite")).

However, the Examiner admits that Connors fails to teach explicitly communications link between the local area network edge device and the gateway.

Further, the Examiner states that Baker teaches communications link between the local area network edge device and the gateway (col. 4, lines 56-61, Baker discloses Network 200 represents a differentiated Services domain. Edge nodes 202 classify incoming traffic into one of a plurality of behavior aggregates. In one embodiment, network 200 implements an Assured Forwarding service and edge nodes 202 classify packets to be forwarded into network 200 into one of four service classes (i.e. the presence of gateway is inherent since Baker teaches a system that has the same functionality. By forwarding classified packets into the network, one would need a gateway, a router or something similar)).

The Examiner concludes it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Connors in view of Baker to provide the non-processing satellite implements a bent pipe communication link between the local area network edge device and the gateway, the motivation to do so being to allow conversion between different types of networks or application.

Appellants respectfully contend that Connors does not teach the dynamic resource system recited in claim 3 wherein the non-processing satellite is a bent pipe communication link for reasons recited above with regard to claim 2 relating to the DAMA and the non-processing satellite, which arguments are hereby respectfully incorporated by reference. Further, in Baker at col. 4, lines 56-61 there is no where disclosed a communications link between the local area network edge device and the gateway since Baker is no where concerned with satellite communications and does not contemplate, suggest, teach or imply the use of a gateway nor a communications link between the local area network edge device and the gateway.

Therefore, Appellants respectfully submit that it would not have been obvious to one of ordinary skill in the art at the time of the invention to modify Connors in view of Baker to

provide the non-processing satellite implements a bent pipe communication link between the local area network edge device and the gateway, the motivation being to allow policies for sharing resources among multiple service classes to be enforced.

As to claim 4, the Examiner contends that Connors teaches the dynamic resources allocation system recited in claim 1 wherein the satellite is a processing satellite comprising an onboard resource management element (col. 2, lines 62-64, Connors discloses in a satellite network 100, the AA 108 resides at the satellite (since the AA 108 performs bandwidth allocation, when it is resided in the satellite, then it is a "processing satellite")).

Appellants respectfully submit that Connors does not teach the dynamic resource allocation system recited in claim 1 wherein the satellite is a processing satellite comprising an onboard resource management element as set out at col. 2, lines 62-64 or the disclosed satellite network 100 for reasons recited above with regard to claim 1 which are hereby respectfully incorporated by reference.

As to claim 5, the Examiner contends that Connors teaches the dynamic resources allocation system recited in claim 1 wherein there is a DAMA communication protocol (col. 2, lines 38-47, Connors discloses Fig. 1 is a communication system using a demand assignment multiple access (DAMA) protocol (i.e. just like dynamic assignment/multiple access or DAMA, meaning the resources are allocated when actually needed or demanded, not reserved ahead of time), comprising two primary elements: (1) a bandwidth request mechanism and (2) a mechanism for coordinating transmission (i.e. "transmitting data over the system")).

The Examiner admits that Connors fails to teach an application detection algorithm but reasons that Baker teaches an application detection algorithm (col. 6, lines 1-6, Baker discloses in one embodiment, an exponential averaging process is used to determine the packet arrival rate for each service class every time a new packet arrives. Let t.sub.k be the arrival time of a new packet and let l.sub.k be the length of the new packet where K is a sequential identifier identifying the new packet).

The Examiner concludes it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Connors in view of Baker to provide the DAMA communication protocol comprising an application detection algorithm, the motivation to do so would be to allow each packet header to identify the packet's Assured Forwarding class (col. 5, lines 27-28).

Appellants respectfully submit that Connors does not teach the dynamic resources allocation system recited in claim 1 wherein there is a DAMA communication protocol (col. 2, lines 38-47 or as Connors discloses in Fig. 1 a communication system using a demand assigned multiple access (DAMA) protocol...DAMA based MAC protocols comprising two

elements...) for the reasons recited above with regard to claim 1 which are hereby respectfully incorporated by reference.

Appellants gratefully acknowledge the Examiner's admission that Connors fails to teach an application detection algorithm.

Appellants respectfully contend that in Baker at col. 6, lines 1-6 there is disclosed an exponential averaging process to determine the packet arrival rate for each service class every time a new packet arrives. Appellants respectfully contend that this in no way teaches, suggests or implies the application detection algorithm as defined in claim 5 and further that Baker is not properly combinable with Connors in any manner to properly reject claim 5 since there is no suggestion, teaching or implication or motivation in either reference to so combine them aside from Appellants' disclosure.

Therefore, Appellants respectfully contend that it would not have been obvious to one of ordinary skill in the art at the time of the invention to modify Connors in view of Baker to provide the DAMA communication protocol comprising an application detection algorithm, the motivation being to allow each packet header to identify the packet's Assured Forwarding class as contended by the Examiner relying on col. 5, lines 27-28 of Baker.

As to claim 6, the Examiner contends that Connors teaches the dynamic resource allocation system recited in claim 1 wherein the DAMA communication protocol comprises a resource requirement estimation algorithm that is based on queue statistics versus performance statistics (col. 12, lines 1-6, Connors discloses the channel selection module...and the random access queue...to form delay estimates of the last packet in each queue).

Appellants respectfully disagree that Connors teaches the dynamic resource allocation system recited in claim 1 wherein the DAMA communication protocol comprises a resource requirement estimation algorithm that is based on queue statistics versus performance statistics (col. 12, lines 1-6 relied upon by the Examiner wherein the Examiner contends Connors discloses the channel selection module...and the random access queue...to form delay estimates of the last packet in each queue) for reasons recited above with regard to claim 1 which are hereby respectfully incorporated by reference.

As to claim 7, the Examiner contends that Connors teaches the dynamic resource allocation system recited in claim 1 wherein the DAMA communication protocol comprises a resource request that generates a resource request to set required resources (col. 4, lines 45-49, Connors discloses the method comprises...transmitting a resource request having a resource metric from the first node to an allocation of resource units according to the resource metric).

Appellants respectfully disagree that Connors teaches the dynamic resource allocation system recited in claim 1 as contended by the Examiner with regard to his

rejection of claim 7 for the reasons recited above with regard to claim 1 which are hereby respectfully incorporated by reference and furthermore that at col. 4, lines 45-49 of Connors there is not taught, suggested or implied the resource request that generates a resource request to set required resources as set out in claim 7.

As to claim 8, the Examiner contends that Connors teaches the dynamic resource allocation system recited in claim 1 wherein the DAMA communication protocol comprises a resource request that sends raw queue statistics to the gateway to set required resources (col. 4, lines 60-67, Connors discloses the apparatus comprises...a DAMA channel buffer...the resource unit request module for generating a resource request metric when indicated by an information rate of the input data, and for receiving an allocation of resource units via a receiver...for dequeuing input data from the DAMA; col. 11, lines 14-16, Connors discloses Fig. 8 shows block diagram of a first node 112 such as an earth station 104 employing the technique of dequeuing data from the DAMA queue to the RA queue).

Appellants respectfully disagree that Connors teaches the dynamic resource allocation system recited in claim 1 as contended by the Examiner with regard to his rejection of claim 8 for reasons recited above with regard to claim 1 which are hereby respectfully incorporated by reference and furthermore Appellants respectfully contend that at col. 4, lines 60-67 of Connors there is not taught, suggested or implied the DAMA communication protocol comprising a resource request that sends raw queue statistics to the gateway to set required resources as required by claim 8. This deficiency is not remedied in Connors at col. 11, lines 14-16 as contended by the Examiner nor in Fig. 8 depicting first node 112 such as an earth station 104 employing the technique of dequeuing data from the DAMA queue to the RA queue.

As to claim 9, the Examiner contends that Connors teaches the dynamic resource allocation system recited in claim 1.

However, the Examiner admits that Connors fails to teach the DAMA communication protocol comprises a weighted fair queuing algorithm that performs a weighted fair queuing that drains the queues while effectively utilizing the gateway assigned resources.

However, the Examiner contends that Baker teaches a weighted fair queuing algorithm (Fig. 3; col. 1, lines 54-60, Baker discloses it is known to support prioritization among different traffic sources or different classes by using queuing techniques such as Weighted Fair Queuing (WFQ), or Weighted Round-Robin (WRR) queuing. These techniques involve dividing traffic among multiple queues and allocating limited packet forwarding bandwidth among the queues according to weights assigned to each queue).

The Examiner concludes it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Connors in view of Baker to provide the DAMA

communication protocol comprises a weighted fair queuing algorithm that performs a weighted fair queuing that drains the queues while effectively utilizing the gateway assigned resources, the motivation to do so being to allow prioritization among different traffic sources or different classes (col. 1, lines 54-55).

Appellants respectfully disagree that Connors teaches the dynamic resource allocation system recited in claim 1 as set out in the Examiner's rejection of claim 9 for reasons recited above with regard to claim 1 which are hereby respectfully incorporated by reference. Appellants respectfully submit that this not remedied in either Fig. 3 or at col. 1, lines 54-60 of Baker which is directed to supporting prioritization among different traffic sources or different classes by using queuing techniques described therein since Baker is non-analogous art, not properly combinable with Connors, nor is the disclosure in Baker in any way sufficient to teach, suggest or imply the weighted fair queuing algorithm that performs a weighted fair queuing that drains the queues while effectively utilizing the gateway assigned resources as required in claim 9.

Appellants therefore disagree it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Connors in view of Baker to provide the DAMA communication protocol comprises a weighted fair queuing algorithm that performs a weighted fair queuing that drains the queues while effectively utilizing the gateway assigned resources, the motivation being to allow prioritization among different traffic sources or different classes.

As to claim 10, the Examiner contends that Connors teaches the dynamic resource allocation system recited in claim 1 wherein the gateway comprises an algorithm that accumulates all requests received at the same time (col. 9, lines 58-62, Connors discloses the measured size of the received data packets is accumulated over time window Tc, as shown in 608, wherein the time window Tc is determined...).

Appellants respectfully disagree that Connors teaches the dynamic resource allocation system recited in claim 1 wherein the gateway comprises an algorithm that accumulates all requests received at the same time (col. 9, lines 58-62, Connors discloses the measured size of the received data packets is accumulated over time window Tc, as shown in 608, wherein the time window Tc is determined...).

Appellants respectfully submit that Connors does not teach the DAMA of claim 1 for reasons recited above with regard to claim 1 which are hereby respectfully incorporated by reference and furthermore at col. 9, lines 58-62, relating to the measured size of the received data packets accumulated over time, in no way suggests, teaches or implies the algorithm of claim 10 that accumulates all requests received at the same time.

As to claim 11, the Examiner contends that Connors teaches the dynamic resource allocation system recited in claim 1.

However, the Examiner admits that Connors fails to teach the gateway comprises an algorithm that functions to assign each edge device a time and frequency resources based upon service classes and consumer profile for each current and previous request.

However, the Examiner contends that Baker teaches the gateway comprises an algorithm that functions to assign each edge device a time and frequency resources based upon service classes and consumer profile for each current and previous request (col. 1, lines 49-54, Baker discloses to support a Differential Services model such as Assured Forwarding, a network node internal to the service provider network must operate packet schedulers for each of its output interfaces to ensure that each class to be output via the interface receives service corresponding to its defined per hop behavior; col. 4, lines 56-61, Baker discloses Network 200 represents a Differentiated Services domain. Edge nodes 202 classify incoming traffic into one of a plurality of behavior aggregates. In one embodiment, network 200 implements an Assured Forwarding service and edge nodes 202 classify packets to be forwarded into network 200 into one of four service classes; see abstract).

The Examiner concludes it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Connors in view of Baker to provide the gateway comprises an algorithm that functions to assign each edge device a time and frequency resources based upon service classes and consumer profile for each current and previous request, the motivation to do so to allow a differentiated service model achieved (abstract).

Appellants respectfully submit that Connors does not teach the dynamic resource allocation system recited in claim 1 as set out with regard to the Examiner's rejection of claim 11 for reasons recited above with regard to claim 1 which are hereby respectfully incorporated by reference.

Furthermore, Appellants respectfully contend that at col. 1, lines 49-54 of Baker, which is non-analogous art and improperly combinable with Connors, which discloses a differential services model such as Assured Forwarding, and col. 4, lines 56-61 of Baker which discloses network 200 representing a differentiated services domain, in no way teaches, suggests or implies the algorithm of claim 11 which functions to assign each edge device a time and frequency resources based upon services classes and consumer profile for each current and previous request.

Therefore, Appellants respectfully disagree it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Connors in view of Baker to provide the gateway comprises an algorithm that functions to assign each edge device a time and frequency resources based upon service classes and consumer profile for each current and previous request, the motivation being to allow a differentiated service model achieved.

As to claim 12, the Examiner contends that Connors teaches the dynamic resource allocation system recited in claim 1 wherein the DAMA communication protocol comprises three modes, including fixed assignment, reservation assignment, and random assignment modes (Fig. 7; col. 2, lines 6-7, Connors discloses these methods vary from random access (RA) to fixed bandwidth allocation (FBA) protocols).

Appellants respectfully disagree that Connors teaches the dynamic resource allocation system recited in claim 1 as described in the Examiner's rejection of claim 12 for the reasons recited above with regard to claim 1 which are hereby respectfully incorporated by reference.

Furthermore, Appellants respectfully submit that in Fig. 7 and col. 2, lines 6-7 of Connors, disclosing several methods for gaining channel access in a shared channel system, in no way teaches, suggests or implies the DAMA communication protocol comprising three modes, including fixed assignment, reservation assignment, and random assignment modes as set out in claim 12.

As to claim 13, the Examiner contends that Connors teaches the dynamic resource allocation system recited in claim 12 wherein, in the fixed assignment mode, a certain amount of bandwidth is allocated for the highest priority users (col. 2, lines 19-25, Connors discloses terminal acquires a fixed amount of channel resources and maintains this resource for the life of the connection. The only time the amount of channel resource may change is when the connection is preempted by another connection with higher priority (i.e. "the highest priority user" are served with "a certain amount of bandwidth", which will create a change in the amount of channel resource)).

Appellants respectfully disagree that Connors teaches the dynamic resource allocation system recited in claim 13 for reasons recited above with regard to both claim 12 and claim 1 which are hereby respectfully incorporated by reference.

Furthermore, Appellants respectfully submit that at col. 2, lines 19-25 of Connors, which discloses fixed bandwidth allocation, does not teach, suggest or imply the fixed assignment mode of claim 13 which requires a certain amount of bandwidth allocated for the highest priority users.

As to claim 14, the Examiner contends that Connors teaches the dynamic resource allocation system recited in claim 12 wherein, in the reserved assignment mode, reservation bandwidth is allocated for users to request their demand without knowledge of others request transmissions (col. 2, lines 55-62, Connors discloses in the request phase, data bandwidth is reserved by the earth station (ES) by a resource request module 116 forming and transmitting a resource requesting having a resource metric that represents the current value of the earth station's 104 desired bandwidth. This resource request

phase allows the ES to communicate their instantaneous bandwidth needs to an allocating agent (AA) 108k, which performs bandwidth allocation).

Appellants respectfully disagree that Connors teaches the dynamic resource allocation system recited in claim 12 as set out in the Examiner's rejection of claim 14 for the reasons recited above with regard to claim 12 and claim 1 which are hereby respectfully incorporated by reference.

Furthermore, Appellants respectfully contend that at col. 2, lines 55-62 of Connors, relating to data bandwidth reserved by the earth station by a resource request module...having a resource metric that represents the current value of the earth station's desired bandwidth, in no way teaches, suggests or implies the reservation assignment mode of claim 14 requiring reservation bandwidth allocated for users to request their demand without knowledge of others request transmissions.

As to claim 15, the Examiner contends that Connors teaches the dynamic resource allocation system recited in claim 12 wherein, in the random access mode, users transmit the data without making reservation (Fig. 7, item 708; col. 2, lines 5-18, Connors discloses...The simplest form of random access is an access protocol wherein the remote users (in this case, earth terminals) transmit packets in an uncoordinated manner. Since collision-free channel resources cannot be guaranteed with RA methods, QoS guarantees, in terms of packet loss and delay, are very weak).

Appellants respectfully disagree that Connors teaches the dynamic resource allocation system recited in claim 12 as employed by the Examiner in his rejection of claim 15 for reasons recited above with regard to claim 12 and claim 1 which are hereby respectfully incorporated by reference.

Furthermore, Appellants respectfully contend that in Fig. 7, item 708 and at col. 2, lines 5-18 of Connors, relating to several methods for gaining channel access in a shared channel system, does not suggest, teach or imply the random assignment mode wherein users transmit the data without making reservations as set out in claim 15.

As to claim 16, the Examiner contends that Connors teaches the dynamic resource allocation system recited in claim 1 wherein the DAMA communication protocol comprises a collision resolution algorithm (col. 6, lines 34-38, Connors discloses packets use random access channel only during scene changes, collisions on the RA channel only occur if scene changes occurs simultaneously).

Appellants respectfully disagree that Connors teaches the dynamic resource allocation system recited in claim 1 as applied in the Examiner's rejection of claim 16 for reasons recited above with regard to claim 1 which are hereby respectfully incorporated by reference.

Furthermore, Appellants respectfully contend that at col. 6, lines 34-38 of Connors, relating to packets using the random access channel only during scene changes wherein collisions on the RA channel only occur if scene changes occur simultaneously in independent uplink video sessions, neither teaches, suggests or implies the DAMA communication protocol set out in claim 16 which comprises a collision resolution algorithm.

As to claim 17, the Examiner contends that Connors teaches the dynamic resource allocation system recited in claim 12 wherein the boundary between the random access mode and the reservation mode is movable in order to reduce the number of collisions whenever there are more best effort users using the system (col. 5, lines 6-11, Connors discloses since packets are moved from the DQ to RAQ on NL packet 1108 basis, random transmission patterns will remain unchanged until the entire NL packet 1108 has been transmitted. For light network loads, this amounts to a new slot pattern each TDMA frame 1104, minimizing the effort of possible collisions).

Appellants respectfully disagree that Connors teaches the dynamic resource allocation system recited in claim 12 as the Examiner has set out in his rejection of claim 17 for reasons recited above with regard to claim 12 and claim 1 which are hereby respectfully incorporated by reference.

Furthermore, Appellants respectfully contend that at col. 5, lines 6-11 of Connors, relating to requesting metric used with a channel that is both random access and DAMA and describes a MAC protocol which solves the delay/capacity trade-off, neither teaches, suggests or implies the dynamic resource allocation system of claim 17 wherein the boundary between the random assignment mode and the reservation mode is movable in order to reduce the number of collisions whenever there are more best effort users using the system.

As to claim 18, the Examiner contends that Connors teaches the dynamic resource allocation system recited in claim 1 wherein the DAMA communication protocol comprises a bandwidth request algorithm, a connection acceptance algorithm, a bandwidth usage detection algorithm, and a resource assignment algorithm (Fig. 3; abstract, Connors discloses DAMA channel buffer for accepting the input data, a resource unit request module, operatively coupled to the transmitter and the receiver, the resource unit request module for generating a resource request metric when indicated by an information rate of the input data, and for receiving an allocation of resource units via the receiver, and a channel selection module, for dequeuing input data from the DAMA channel buffer to an RA channel buffer according to a predicted channel delay and a delay threshold (i.e. a set of ordered steps for solving a problem or algorithm)).

Appellants respectfully disagree that Connors teaches the dynamic resource allocation system recited in claim 1 as contended by the Examiner in his rejection of claim

18 for reasons recited above with regard to claim 1 which are hereby respectfully incorporated by reference.

Furthermore, Appellants respectfully submit that in Fig. 3 of Connors and in the abstract there is neither taught, suggested or disclosed the dynamic resource allocation system as set out in claim 18 wherein the DAMA communication protocol comprises a bandwidth request algorithm, a connection acceptance algorithm, a bandwidth usage detection algorithm, and a resource assignment algorithm.

Appellants respectfully submit that at col. 5, lines 12-14 of Connors there is disclosed "For example, the MAC protocol described herein can be advantageously used with video conferencing tools running over an Internet MBone." Appellants respectfully submit that this does little to cure the deficiencies of the instant rejections as they apply to claim 1 since Connors is seen directed to a method and apparatus for medium access control from integrated services packet-switched satellite networks employing DAMA or demand assigned multiple access protocol, whereas Baker no where suggests, teaches or implies application to satellite networks and, in addition, does not teach, suggest or imply DAMA protocols, demand assigned multiple access, but is concerned with a technique which dynamically adjusts resource allocations for each traffic class based on actual traffic load measured for each service class. Furthermore, Appellants respectfully submit that at col. 7, lines 30 et seq. of Baker suggesting other applications of the invention described therein it is stated "for example, the resource allocation technique described here may also be applied to Expedited Forwarding per hop behavior rules." Appellants respectfully submit that no where is there any suggestion, implication or teaching in Baker relating to application of the dynamic weighted resource sharing system defined therein to satellite networks, nor to satellite networks employing DAMA protocol. For these reasons, Appellants respectfully submit that Connors is not analogous to Baker and may not be properly combined therewith the reject Appellants' claims, citing *In re Fine, 837* F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Furthermore, the Examiner takes the position that a preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone, citing *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150m 152m 88 USPQ 478, 481 (CCPA 1951). Appellants respectfully submit that the instant invention is directed to the use of satellite networks which comprise a gateway that interfaces to an Internet service provider or corporate network, a local area network edge device, a satellite that provides a communication link between the gateway

and the local area network edge device, and one or more personal computers coupled by way of a network to the local area network edge device, a dynamic resource allocation system that supports differentiated services with different levels of priority comprising an Internet protocol network that comprises a classifier for identifying specific types of messages, and a dynamic assignment/multiple access (DAMA) communication protocol for transmitting data over the system. Appellants' invention is not directed to an Internet protocol network that comprises a classifier for identifying specific types of messages and a DAMA as defined in claim 1, but the use of that as part of a system in connection with implementation in satellite networks as defined in claim 1. The claim is admittedly written in modified Jepson form but the gateway is a necessary element of the system and is not in any way taught, suggested or implied by Connors which is directed to integrated services packet-switched satellite networks.

Appellants respectfully submit that in view of the above remarks all of the claims presently under prosecution have been shown to contain patentable subject matter and to be patentably distinguishable over Connors '267 or Baker et al '231, alone or in any combination.

Accordingly, Appellants respectfully request that the final rejection of the primary Examiner be reversed.

Respectfully submitted,

AW Karambelas

Anthony W. Karambelas
Registration No. 25,657

Karambelas & Associates
655 Deep Valley Drive, Suite 303
Rolling Hills Estates, CA 90274
Telephone: (310) 265-9565
Facsimile: (310) 265-9545

CLAIMS APPENDIX

Claims 1-18 as presented below are currently pending in this application.

1. In a system that comprises a gateway that interfaces to an Internet service provider or corporate network, a local area network edge device, a satellite that provides a communication link between the gateway and the local area network edge device, and one or more personal computers coupled by way of a network to the local area network edge device, a dynamic resource allocation system that supports differentiated services with different levels of priority, comprising:

an Internet protocol network that comprises:

a classifier for identifying specific types of messages; and

a dynamic assignment/multiple access (DAMA) communication protocol for transmitting data over the system.

2. The dynamic resource allocation system recited in Claim 1 wherein the satellite is a non-processing satellite.

3. The dynamic resource allocation system recited in Claim 2 wherein the non-processing satellite implements a bent pipe communications link between the local area network edge device and the gateway.

4. The dynamic resource allocation system recited in Claim 1 wherein the satellite is a processing satellite comprising an onboard resource management element.

5. The dynamic resource allocation system recited in Claim 1 wherein the DAMA communication protocol comprises an application detection algorithm.

6. The dynamic resource allocation system recited in Claim 1 wherein the DAMA communication protocol comprises a resource requirement estimation algorithm that is based on queue statistics versus performance statistics.

7. The dynamic resource allocation system recited in Claim 1 wherein the DAMA communication protocol comprises a resource request that generates a resource request to set required resources.

8. The dynamic resource allocation system recited in Claim 1 wherein the DAMA communication protocol comprises a resource request that sends raw queue statistics to the gateway to set required resources.

9. The dynamic resource allocation system recited in Claim 1 wherein the DAMA communication protocol comprises a weighted fair queuing algorithm that performs a weighted fair queuing that drains the queues while effectively utilizing the gateway assigned resources.

10. The dynamic resource allocation system recited in Claim 1 wherein the gateway comprises an algorithm that accumulates all requests received at substantially the same time.

11. The dynamic resource allocation system recited in Claim 1 wherein the gateway comprises an algorithm that functions to assign each edge device a time and frequency resources based upon services classes and consumer profile for each current and previous request.

12. The dynamic resource allocation system recited in Claim 1 wherein the DAMA communication protocol comprises three modes, including fixed assignment, reservation assignment, and random assignment modes.

13. The dynamic resource allocation system recited in Claim 12 wherein, in the fixed assignment mode, a certain amount of bandwidth is allocated for the highest priority users.

14. The dynamic resource allocation system recited in Claim 12 wherein, in the reservation assignment mode, reservation bandwidth is allocated for users to request their demand without knowledge of others request transmissions.

15. The dynamic resource allocation system recited in Claim 12 wherein, in the random assignment mode, users transmit the data without making reservations.

16. The dynamic resource allocation system recited in Claim 1 wherein the DAMA communication protocol comprises a collision resolution algorithm.

17. The dynamic resource allocation system recited in Claim 12 wherein the boundary between the random assignment mode and the reservation mode is movable in order to reduce the number of collisions whenever there are more best effort users using the system.

18. The dynamic resource allocation system recited in Claim 1 wherein the DAMA communication protocol comprises a bandwidth request algorithm, a connection acceptance algorithm, a bandwidth usage detection algorithm, and a resource assignment algorithm.

EVIDENCE APPENDIX

RELATED PROCEEDINGS APPENDIX